

Introduction to the Carbon Trust

Carbon Trust
August 2008

A decorative graphic at the bottom of the slide consists of three overlapping, wavy lines in dark blue, medium blue, and light blue, flowing from left to right across the bottom of the page.

Contents

➤ Context

➤ Carbon Trust:

- Role and resources
- Activities
- Achievements
- Next steps

➤ Questions

The challenge of climate change

<400ppm

Source: Stern Review

>750ppm

global temperature change (relative to pre-industrial times)

0°C

1°C

2°C

3°C

4°C

5°C

Food

Falling crop yields in many areas, particularly developing regions

Possible rising yields in some high latitude regions

Falling yields in many developed regions

Water

Small mountain glaciers disappear – water supplies threatened in several areas

Significant decreases in water availability in many areas, including Mediterranean and Southern Africa

Sea level rise threatens major cities

Ecosystems

Extensive Damage to Coral Reefs

Rising number of species face extinction

Extreme Weather Events

Rising intensity of storms, forest fires, droughts, flooding and heat waves

Risk of Abrupt and Major Irreversible Changes

Increasing risk of dangerous feedbacks and abrupt, large-scale shifts in the climate system

Climate change is the “greatest and widest-ranging market failure ever seen”

Source: Stern Review



Three elements of policy for mitigation are essential:

- establishing a carbon price, through tax, trading or regulation;
- support for the development of a range of low-carbon and high-efficiency technologies on an urgent timescale; and
- removal of barriers to behavioural change thereby encouraging the take-up of opportunities for energy efficiency.

Leaving out any one of these elements, or delaying action, will significantly increase costs.

Climate change: transforming the way we do business



1 Physical Impacts

- Vulnerability of physical assets
- Supply chain disruption
- Workforce disruption
- Business interruptions
- Risk management, insurance and adaptation costs

2 Regulation

- Regulation of emissions
- Product standards
- Tax, subsidies, credits
- Carbon markets
- Disclosure, litigation
- Cost of compliance

4 Market Dynamics

- Exposure to rising energy costs
- Changing consumer attitudes
- New technology, products & markets
- Competitive response to 1, 2, 3

3 Reputation

- Customer and societal perceptions
- Employee and investor perceptions
- Brand/ image impact

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The Carbon Trust: role and resources



- The Carbon Trust was set up by the UK Government in 2001 as an independent company. Our mission is *"to accelerate the move to a low carbon economy"*
- Our financial activity in fiscal 2007-08 was ~ £115M; we employ ~150 staff and have ~350 accredited consultants on our books
- We work with organisations to reduce carbon emissions and develop commercially viable low carbon technologies and businesses
- To deliver our mission we bring together public and private funding and encourage cross sector partnerships
- As a Company Limited by Guarantee any profits we make are reinvested to help deliver our mission

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Our UK activities cover 5 complementary business areas



Insights

Explains the opportunities surrounding climate change



Solutions

Delivers carbon reduction solutions



Innovations

Develops low carbon technologies



Enterprises

Creates low carbon businesses



Investments

Finances clean energy businesses

Carbon Trust Insights

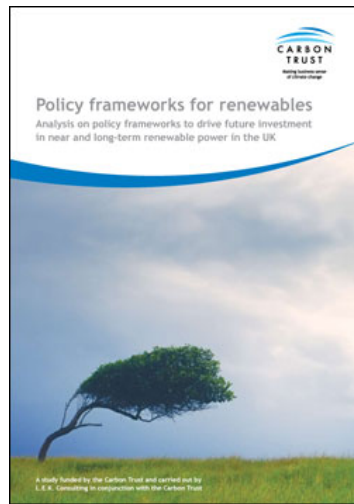
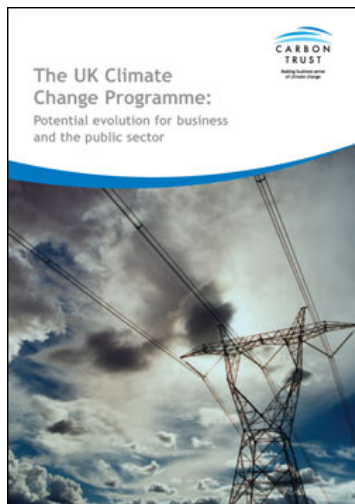


What we do

Carbon Trust Insights explains the issues and opportunities surrounding climate change and carbon reduction, developing low carbon strategies that engage Government and business

Why it's needed

By cutting through the complexity surrounding a low carbon economy, Carbon Trust Insights helps businesses and Government make better decisions and take effective action



Carbon Trust Solutions



What we do

Carbon Trust Solutions helps business and the public sector identify carbon savings opportunities and finds ways of achieving them.

Why it's needed

Uncertainty about the best course of action, together with a lack of time, money and resources, can prevent businesses from reducing their carbon emissions.

- | | |
|-----------------------------|---|
| Carbon Management | ➤ Company-wide service which assesses and quantifies emission reduction opportunities and leads directly to action. |
| Strategic Insights | ➤ Strategic approach, currently being trialled, which financially quantifies the opportunities and risks around Climate Change |
| Collaborative action | ➤ Consultancy and financial support to trade and professional bodies, to help their members reduce emissions. |
| Carbon Surveys | ➤ Site-based, providing carbon saving and building design advice. |
| Financial Services | ➤ Interest free energy efficiency loans for smaller companies; management of the Government's Energy Technology List for Enhanced Capital Allowances. |
| Helpline, Website | ➤ Expert energy efficiency advice for small businesses |

Solutions Case Studies



- Based in the north-west of England, largest listed water company in the UK with more than 8,000 employees
- Major energy consumer, using around one third of a percent of the UK's electricity in 2006-7
- Operates Davy Hulme sewerage plant, the largest of its kind in Europe
- At Davy Hulme, waste processes were inefficient and energy intensive, costing 20 million a year and producing large amounts of methane, a greenhouse gas
- Company wanted to be a leader in its sector for carbon conservation

Carbon Trust support



- Engaged with company both at board level and across the business to identify carbon and cost savings, as well as commercial opportunities
- United Utilities now investing up to £22 million in carbon and energy cutting measures across 17 sites, with expected savings of £7 million annually
- The methane produced at Davy Hulme now goes towards powering the plant
- Our R&D helped them develop a new technology to radically reduce the cost of water treatment and shrink the company's carbon footprint by 80,000 tonnes
- Company has also instituted various measures across its business, including
 - developing a carbon modelling tool upon which business decisions are now based
 - instituting an employee engagement programme

SAM Mouldings



- Family-run business based in Antrim, Northern Ireland
- Manufactures products for the construction and home improvement industry
- Producing these mixed density fibre architectural mouldings was creating an energy bill of around £230,000 a year
- SAM Mouldings contacted us for advice on energy efficiency
- Key drivers were energy self sufficiency and cost savings

Carbon Trust support



- SAM Mouldings wanted to install equipment costing £1.2 million that would recycle their waste to generate electricity and heat
- It applied for an interest-free Energy Efficiency Loan from the Carbon Trust, and was awarded £200,000
- As a result, the company now generates its own power and saves £230,000 per year
- Now producing an electricity surplus, which it sells to the grid for more than £33,000 a year
- Plus saving £300,000 on waste disposal and a projected 1,195 tonnes of carbon a year

Carbon Trust Innovations



What we do

Carbon Trust innovations helps develop commercially promising low carbon technologies, through partnerships, funding, expert advice and large-scale demonstrations.

Why it's needed

Many promising low carbon technologies are still in their infancy. Carbon Trust Innovations helps bring those that have commercial potential to market earlier - working with over 800 organisations, leveraging £4 private sector for every £1 public sector.

RD&D

- Applied research focused on developing low carbon technologies with commercial potential
- 150 projects over 7 years, contributing £18.5m towards £44m research work
- Developing procured research capability – 3rd Gen PV
- Pipeline for Incubators and VC



Birmingham University:

- Exploration of novel materials, which could store large amounts of hydrogen
- Carbon Trust funding enabled the use of sophisticated research techniques

Technology Acceleration

- Working with industry to remove technical and market barriers to adoption of low carbon technologies
- 6 Tech accelerators
- Proven carbon benefits – smart metering, micro-CHP
- New marine accelerator targeting 20-40% cost reduction



Marine:

- Accelerated technology development process and 20% cost reductions
- Demonstrated potential for up to 5GW marine capacity in Europe by 2020

Incubators

- Supporting development of low carbon businesses as key ideas are spun out from leading institutions
- 60 Incubator companies, attracting £65m investment
- Developing businesses that secure further funding
- Phase 2 incubators targeting significant volume increase



Heliswirl:

- Breakthrough fluid technology
- Support for market research and Intellectual Property protection
- Carbon Trust backing providing investment credibility

Innovations Case Studies



- Based near Cambridge, Telensa is a subsidiary of Plextek – an electronics design house.
- They have developed a system that helps local authorities save energy by monitoring and controlling street lighting more closely.
- It uses a telecell to provide more information about when lights are needed – and when they are wasting energy.
- Information is transported to a central hub by wireless radio.
- Telensa needed funding to test the new system in practice, to demonstrate energy savings and cost-effectiveness.

Carbon Trust support



- Telensa was awarded a Carbon Trust research grant of £250,000 in 2005.
- This enabled Telensa to test their system in London and Manchester.
- Tests proved that the technology could reduce energy consumption by more closely monitoring lights.
- Showed that system could be marketed for half the cost of competitors.
- Introduced to 40 UK councils (local authorities)
- More trials underway to test and develop the system.

- ACAL Technology Ltd provides specialist design-in, sales and marketing services for electronics companies.
- The company is developing low temperature fuel cell technology with a new cathode configuration– FlowCath®.
- FlowCath® improves performance, while reducing production costs, making it more commercially viable.
- ACAL needed help to build a business case for FlowCath®, and better understand their target markets.
- Also needed advice on funding and recruitment.

Carbon Trust support



- ACAL heard about the Business Incubator programme at a clean energy event, and was accepted on to it in 2005.
- Carbon Trust has helped ACAL:
 - identify potential customers, business partners and investors
 - clarify organisational structure and job roles
 - create a business plan
- ACAL has now put in place a funding programme, started recruiting and is talking to potential partners.
- FlowCath® continues to perform well in trials and the company is working on a standalone 1kW unit to generate stationary power.
- Secured £1.6 million in venture capital during 2007.

Carbon Trust Enterprises



What we do

Carbon Trust enterprises creates new, high growth, low carbon businesses by identifying opportunities and bringing together key skills and resources

Why it's needed

To accelerates the development of new low carbon markets and provide opportunities for private sector investment

Example Market Opportunity: Waste, energy and carbon developments "tipping" project economics

➤ Waste

- EU Waste Framework Directive
- EU Landfill Directive
- UK Animal By-Products Regulation

➤ Energy

- Hedge against energy price volatility
- Security of Supply, Renewable Obligation

➤ Carbon

- Global Warming (Kyoto etc.)
- EU ETS and Climate Change Levy

➤ Reputational

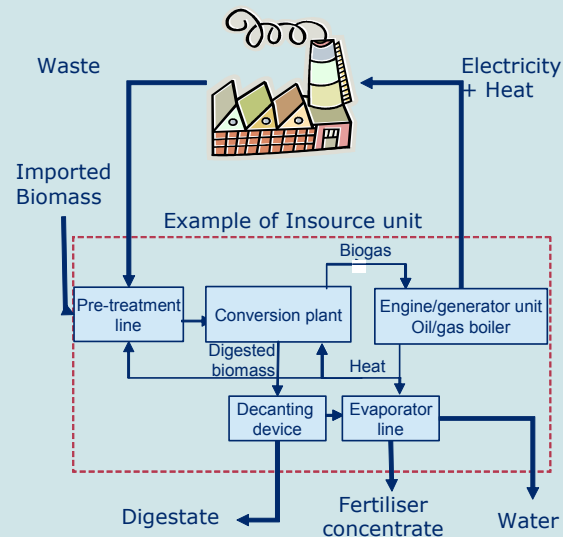
- Corporate Social Responsibility
- Public Affairs, Low Carbon Branding

Carbon Trust Enterprises Proposition:

Onsite Waste to Energy Unit – **InSource Energy**

£2.7m investment from Scottish & Southern Energy

Current valuation: £6.75m



Carbon Trust – Commercial Product Carbon Footprinting & Labelling



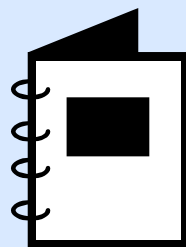
Product carbon footprinting & labelling reduces carbon across supply chain

Aims of the initiative

To build a globally accepted initiative to measure, reduce and communicate the lifecycle GHG emissions of products.

The initiative aims to drive action in companies to reduce emissions across the value chain through transparent, robust and consistent information to support purchasing and business decisions

1. Standards setting



- BSI PAS 2050: Measurement
- Code of Good practice for product GHG emissions and reduction claims
- Working with WRI, WBCSD and ISO

2. Customer label



- Testing a carbon reduction label
- On-pack, POS, website, catalogues
- Companies include Tesco and PepsiCo
- Delivered through The Carbon Label Company

Our plans in the US are to engage with business & key stakeholders



Corporate Engagement

- We are looking to work with companies in different sectors to:
 - assist in pilot product carbon footprinting & labelling initiatives that they have in the US
 - provide the certification and customer communication schemes for the product carbon footprints that have been calculated
 - bring experience and knowledge from the U.K. to pilots in the U.S.
 - help in the development of sector level implementation / guidance documents
 - learn from pilots to inform the future versions of the standards
 - help in the development of standardized emission datasets
 - understand consumer perceptions in the U.S.
 - help educate consumers on product carbon footprint related issues



Stakeholder Engagement

- We are looking to collaborate with the key organizations (NGOs, think tanks, governmental organizations, etc.) that are looking at product carbon footprinting & labelling standards
 - Goal is to ensure consistent global standards and labelling schemes rather than a multitude of regional / national schemes
- In order to position the pilots properly, we are also looking to actively engage in external communications of our pilot initiatives through the following means:
 - At the beginning of pilot programs to raise awareness and create a buzz about the initiatives
 - After pilot completed / prior to public communication of results
 - Other venues such as conferences, trade shows, etc.

Carbon Trust Standard






The Carbon Trust Standard certifies that an organisation has genuinely reduced its carbon footprint and committed to reducing it year on year.

www.carbontruststandard.com

The Carbon Trust Standard: aims



- Encourage organisations to measure, manage and reduce their carbon emissions
 - Build on established approaches:
 - Measurement: Greenhouse Gas Protocol / ISO14064
 - Management: Energy Efficiency Accreditation Scheme
- 
- Reward good performance + deliver benefits to business
 - External communications
 - Employee motivation
 - Link to Carbon Reduction Commitment (CRC)
- 

12 certified organisations at launch in June



8% absolute saving – 250 ktCO2 per annum

Carbon Trust Investments



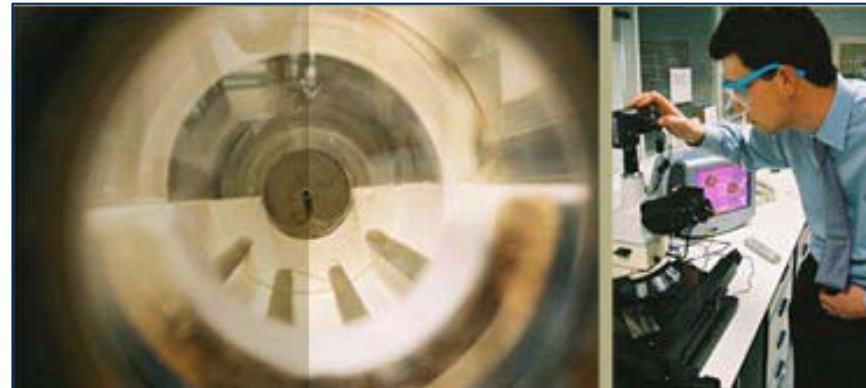
What we do

Carbon Trust investments finances low carbon enterprises that demonstrate commercial potential

Why it's needed

Very limited funds for early stage clean energy investments. Carbon Trust equity investments help viable businesses grow and, by delivering commercial returns, encourages others to invest, thereby building scale and pace in the market.

- Eleven investments totalling over £9.1m have been made, leveraging over £90m of private investment into low carbon companies, two of which have gone on to list on the UK's Alternative Investment Market
- In 2006/07 set up a £2m Low Carbon Seed Fund, providing up to £250,000 investment in individual low carbon businesses
 - In partnership with Imperial Innovations Limited and co-funded by the Shell Foundation
- In 2006/07 we set up CT Investment Partners LLP as a separate Financial Services Authority regulated business



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Achievements: informing policy development and business thinking



- Produced influential analysis of the UK's Climate Change programme which has led to the introduction of the Carbon Reduction Commitment – a mandatory emissions trading scheme for large non-energy intensive organisations covering direct and indirect emissions;
- Analysis of the EU Emissions Trading Scheme Phase 1 showed where the Scheme was weak and made recommendations to improve effectiveness in later Phases. Sectoral analysis is informing the debate on competitiveness impacts;
- Review of policy support for renewable energy in the UK has highlighted where there are opportunities to accelerate market activities;
- Carbon footprint supply chain analysis has underpinned the development of a methodology for carbon product labelling – now one of the Carbon Trust's commercial undertakings.

Achievements: abating carbon emissions and saving money



- Since we were launched in 2001 we have helped our customers save over 17 MtCO₂ – worth over £1 billion of cost savings
- We currently work with 52% of FTSE 100 companies and over 33% of businesses with energy spends greater than £500K and small and medium sized companies make up 40% of our customer base
- Our activities deliver emissions savings at a cost to us of £4 to £6 per tonne of CO₂
- We have achieved assurance from KPMG over the process we use to measure the carbon savings made by customers implementing our recommendations
-
- Our support of low carbon technology has leveraged £4 of private sector capital for every £1 we have put in and around £10 for every £1 committed to our venture capital investments

Achievements: accelerating the pace of low carbon innovation



- Created seamless support offerings for clean energy technology development from R&D to commercial viability
- To date we have committed £38m to our technology accelerator portfolio, working with 800 organisations to development of low carbon technologies including Micro- CHP, biomass heat, marine energy and offshore wind energy
- Since 2001 we have run 150 applied research projects contributing £18.5m towards over £44m of research work
- Through our business incubator scheme we have supported 60 early stage low carbon companies, helping them to attract over £65m private investment
- In 2008, we launched a £40m offshore wind initiative with the Energy Technologies Institute

Achievements: exploiting untapped low carbon business opportunities



- **Partnerships for Renewables** – launched to leverage £500m investment and develop a 500MW portfolio of renewable projects on public sector land over the next 5-8 years.
 - HSBC Environmental Fund invested £18m of equity and has committed to providing up to £100m project finance
- **Insource Energy** – develops on-site waste-to-energy facilities for food and drink manufacturers.
 - Scottish & Southern Energy committed an equity investment of £2.7m and a further £10m project finance
- **The Carbon Label Company** – helps companies verify and communicate the carbon emissions of their products and services
- **The Carbon Standard Company** – independently certifies that an organisation has genuinely reduced its carbon footprint and is committed to making further reductions year on year.

Achievements: making a commercial return on low carbon investments



- To date Carbon Trust Investments has made 11 investments totalling over £9m, which have leveraged over £90m of private investment into low carbon companies, two of which have gone on to list on the UK's Alternative Investment Market
- In 2008, we committed £3.2m to new investments and leveraged almost £22m additional private sector funding
- In the year we completed investments in two new portfolio companies: Cambridge Semiconductors and Green Biologics
- Over the last five years Carbon Trust Investments has achieved top quartile returns

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Next steps for the Carbon Trust



➤ **Commercialising our market facing activities, including:**

- Advice and implementation services for business and public sector;
- Carbon Trust Standard – a scheme which certifies that an organisation has genuinely reduced its carbon footprint and is committed to reducing it year on year;
- Carbon supply chain analysis and product labelling to drive action in companies to reduce emissions across the value chain.

➤ **Extending our international activities, including:**

- Responding to requests to inform climate change policy developments;
- responding to demand for our accreditation services in carbon footprinting; and
- catalysing international collaboration to develop commercial low carbon technologies through a network of locally run innovation centres.

➤ **Where we are active internationally:**

- US: cooperation agreement with Florida; California Carbon Trust concept development; carbon product labelling;
- China: cooperation agreement with the China Energy Conservation Investment Corporation on a product labelling feasibility study;
- EU: developing our labelling business;
- Middle-east: commercial low carbon technology fund
- World Bank, World Economic Forum, UN Environment Programme, etc

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A catalyst for low carbon enterprise

www.carbontrust.co.uk